

Texin® 950 U

Thermoplastic Polyurethane Elastomer (Polyether)

Covestro - PUR

Message:

Texin 950U resin is a polyether-based thermoplastic polyurethane with a Shore hardness of approximately 50D. It can be processed by injection molding or extrusion.

General Information			
Additive	heat stabilizer		
	UV stabilizer		
Features	High ESCR (Stress Cracking Resistance)		
	Anti-salt water/fog		
	Impact resistance, good		
	Good flexibility		
	Good wear resistance		
	Hydrolysis resistance		
	Thermal Stability		
	Good toughness		
Uses	Pipe		
	Pipe fittings		
	Connector		
	Footwear		
Agency Ratings	NSF 61		
Appearance	Natural color		
Processing Method	Extrusion		
	Injection molding		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.15	g/cm ³	ASTM D792, ISO 1183
Molding Shrinkage			
Flow: 2.54mm	0.80	%	ASTM D955
Transverse flow: 2.54mm	0.80	%	ASTM D955
Vertical flow direction: 2.54mm	0.80	%	ISO 2577
Flow direction: 2.54mm	0.80	%	ISO 2577
Hardness	Nominal Value	Unit	Test Method
Durometer Hardness (Shore D)	50		ASTM D2240, ISO 868
Mechanical	Nominal Value	Unit	Test Method

Flexural Modulus			ASTM D790, ISO 178
23°C	114	MPa	ASTM D790, ISO 178
70°C	46.9	MPa	ASTM D790, ISO 178
Taber Abrasion Resistance			
1000 Cycles, 1000g, H-18 wheel	75.0	mg	ISO 4649
1000 Cycles, 1000g, H-18 wheel	75.0	mg	ASTM D1044
Elastomers	Nominal Value	Unit	Test Method
Tensile Stress			
50% strain	12.1	MPa	ISO 37, ASTM D412
100% strain	13.8	MPa	ASTM D412, ISO 37
300% strain	27.6	MPa	ASTM D412, ISO 37
Tensile Strength (Yield)	49.0	MPa	ASTM D412, ISO 37
Tensile Elongation (Break)	470	%	ASTM D412, ISO 37
Tear Strength			
-- ¹	131	kN/m	ASTM D624
--	130	kN/m	ISO 34-1
Compression Set			ASTM D395B, ISO 815
23°C, 22 hr ²	15	%	ASTM D395B, ISO 815
23°C, 22 hr	20	%	ASTM D395B, ISO 815
70°C, 22 hr ³	40	%	ASTM D395B, ISO 815
70°C, 22 hr	70	%	ASTM D395B, ISO 815
Bayshore Resilience	35	%	ASTM D2632
Aging	Nominal Value	Unit	Test Method
Change in Tensile Strength in Air			
100°C, 70 hr	2.0	%	ASTM D573, ISO 216
100% strain, 100°C, 70 hr	4.0	%	ASTM D573
300% strain, 100°C, 70 hr	2.0	%	ASTM D573
100°C, 168 hr	2.0	%	ASTM D573, ISO 216
100% strain, 100°C, 168 hr	4.0	%	ASTM D573
300% strain, 100°C, 168 hr	-1.0	%	ASTM D573
100°C, 336 hr	4.0	%	ASTM D573, ISO 216
100% strain, 100°C, 336 hr	4.0	%	ASTM D573
300% strain, 100°C, 336 hr	-2.0	%	ASTM D573
100°C, 504 hr	38	%	ASTM D573, ISO 216
100% strain, 100°C, 504 hr	5.0	%	ASTM D573
300% strain, 100°C, 504 hr	-3.0	%	ASTM D573
125°C, 70 hr	-11	%	ASTM D573, ISO 216
100% strain, 125°C, 70 hr	1.0	%	ASTM D573
300% strain, 125°C, 70 hr	-7.0	%	ASTM D573
125°C, 168 hr	-27	%	ASTM D573, ISO 216
100% strain, 125°C, 168 hr	4.0	%	ASTM D573
300% strain, 125°C, 168 hr	-18	%	ASTM D573

125°C, 336 hr	-40	%	ASTM D573, ISO 216
100% strain, 125°C, 336 hr	0.0	%	ASTM D573
300% strain, 125°C, 336 hr	-22	%	ASTM D573
125°C, 504 hr	-44	%	ASTM D573, ISO 216
100% strain, 125°C, 504 hr	-5.0	%	ASTM D573
300% strain, 125°C, 504 hr	-25	%	ASTM D573
100% strain 100°C, 70 hr	4.0	%	ISO 216
300% strain 100°C, 70 hr	2.0	%	ISO 216
100% strain 100°C, 168 hr	4.0	%	ISO 216
300% strain 100°C, 168 hr	-1.0	%	ISO 216
100% strain 100°C, 336 hr	4.0	%	ISO 216
300% strain 100°C, 336 hr	-2.0	%	ISO 216
100% strain 100 c, 504 hr	5.0	%	ISO 216
300% strain 100 c, 504 hr	-3.0	%	ISO 216
100% strain 125°C, 70 hr	1.0	%	ISO 216
300% strain 125°C, 70 hr	-7.0	%	ISO 216
100% strain 125°C, 168 hr	4.0	%	ISO 216
300% strain 125°C, 168 hr	-18	%	ISO 216
100% strain 125°C, 336 hr	0.0	%	ISO 216
300% strain 125°C, 336 hr	-22	%	ISO 216
100% strain 125 c, 504 hr	-5.0	%	ISO 216
300% strain 125 c, 504 hr	-25	%	ISO 216
Change in Ultimate Elongation in Air			ASTM D573, ISO 216
100°C, 70 hr	10	%	ASTM D573, ISO 216
100°C, 168 hr	15	%	ASTM D573, ISO 216
100°C, 336 hr	19	%	ASTM D573, ISO 216
100°C, 504 hr	16	%	ASTM D573, ISO 216
125°C, 70 hr	22	%	ASTM D573, ISO 216
125°C, 168 hr	29	%	ASTM D573, ISO 216
125°C, 336 hr	12	%	ASTM D573, ISO 216
125°C, 504 hr	9.0	%	ASTM D573, ISO 216
Change in Durometer Hardness in Air			ASTM D573, ISO 216
Support d, 100°C, 70 hr	-1.0		ASTM D573, ISO 216
Support d, 100°C, 168 hr	0.0		ASTM D573, ISO 216
Support d, 100 c, 336 hr	-2.0		ASTM D573, ISO 216
Support d, 100 c, 504 hr	-1.0		ASTM D573, ISO 216
Support d, 125°C, 70 hr	1.0		ASTM D573, ISO 216
Support d, 125°C, 168 hr	-1.0		ASTM D573, ISO 216
Support d, 125 c, 336 hr	-1.0		ASTM D573, ISO 216
Support d, 125 c, 504 hr	1.0		ASTM D573, ISO 216
Change in Tensile Strength			
23°C, 70 hr, Class C Standard Fuel	-17	%	ASTM D471

100% strain, 23°C, 70 hr, Class C standard fuel	-42	%	ASTM D471
300% strain, 23°C, 70 hr, Class C standard fuel	-36	%	ASTM D471
23°C, 70 hr, in reference fuel A	16	%	ASTM D471
100% strain, 23°C, 70 hr, in reference fuel A	-3.0	%	ASTM D471
300% strain, 23°C, 70 hr, in reference fuel A	0.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	-17	%	ASTM D471
100% strain, 23°C, 168 hr, Class C standard fuel	-36	%	ASTM D471
300% strain, 23°C, 168 hr, Class C standard fuel	-30	%	ASTM D471
23°C, 168 hr, in reference fuel A	16	%	ASTM D471
100% strain, 23°C, 168 hr, in reference fuel a	6.0	%	ASTM D471
300% strain, 23°C, 168 hr, in reference fuel a	2.0	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	-20	%	ASTM D471
100% strain, 23°C, 336 hr, Class C standard fuel	-36	%	ASTM D471
300% strain, 23°C, 336 hr, Class C standard fuel	-33	%	ASTM D471
23°C, 336 hr, in reference fuel A	7.0	%	ASTM D471
100% strain, 23°C, 336 hr, in reference fuel A	1.0	%	ASTM D471
300% strain, 23°C, 336 hr, in reference fuel A	3.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	-15	%	ASTM D471
100% strain, 23°C, 504 hr, Class C standard fuel	-36	%	ASTM D471
300% strain, 23°C, 504 hr, Class C standard fuel	-51	%	ASTM D471
23°C, 504 hr, in reference fuel A	13	%	ASTM D471
100% strain, 23°C, 504 hr, in reference fuel A	-4.0	%	ASTM D471
300% strain, 23°C, 504 hr, in reference fuel A	-4.0	%	ASTM D471
100°C, 70 hr, in ASTM #1 oil	2.0	%	ASTM D471, ISO 175
100% strain, 100°C, 70 hr, in ASTM #1 oil	7.0	%	ASTM D471, ISO 175
300% strain, 100°C, 70 hr, in ASTM #1 oil	0.0	%	ASTM D471, ISO 175
100°C, 70 hr, in ASTM #3 oil	10	%	ASTM D471, ISO 175
100% strain, 100°C, 70 hr, in ASTM #3 oil	2.0	%	ASTM D471, ISO 175
300% strain, 100°C, 70 hr, in ASTM #3 oil	3.0	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #1 oil	0.0	%	ASTM D471, ISO 175
100% strain, 100°C, 168 hr, in ASTM #1 oil	4.0	%	ASTM D471, ISO 175

300% strain, 100°C, 168 hr, in ASTM #1 oil	0.0	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #3 oil	12	%	ASTM D471, ISO 175
100% strain, 100°C, 168 hr, in ASTM #3 oil	-7.0	%	ASTM D471, ISO 175
300% strain, 100°C, 168 hr, in ASTM #3 oil	-11	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #1 oil	-2.0	%	ASTM D471, ISO 175
100% strain, 100°C, 336 hr, in ASTM #1 oil	8.0	%	ASTM D471, ISO 175
300% strain, 100°C, 336 hr, in ASTM #1 oil	0.0	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #3 oil	-3.0	%	ASTM D471, ISO 175
100% strain, 100°C, 336 hr, in ASTM #3 oil	-2.0	%	ASTM D471, ISO 175
300% strain, 100°C, 336 hr, in ASTM #3 oil	-9.0	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #1 oil	-3.0	%	ASTM D471, ISO 175
100% strain, 100°C, 504 hr, in ASTM #1 oil	4.0	%	ASTM D471, ISO 175
300% strain, 100°C, 504 hr, in ASTM #1 oil	-7.0	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #3 oil	1.0	%	ASTM D471, ISO 175
100% strain, 100°C, 504 hr, in ASTM #3 oil	-9.0	%	ASTM D471, ISO 175
300% strain, 100°C, 504 hr, in ASTM #3 oil	-18	%	ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel C	-17	%	ISO 175
100% strain, 23 c, 70 hr, in Reference Fuel C	-42	%	ISO 175
300% strain, 23 c, 70 hr, in Reference Fuel C	-36	%	ISO 175
23°C, 70 hr, in reference fuel A (isooctane)	16	%	ISO 175
100% strain, 23°C, 70 hr, in reference fuel A (isooctane)	-3.0	%	ISO 175
300% strain, 23°C, 70 hr, in reference fuel A (isooctane)	0.0	%	ISO 175
23°C, 168 hr, in Reference Fuel C	-17	%	ISO 175
100% strain, 23 c, 168 hr, in Reference Fuel C	-36	%	ISO 175
300% strain, 23 c, 168 hr, in Reference Fuel C	-30	%	ISO 175
23°C, 168 hr, in reference fuel A (isooctane)	16	%	ISO 175
100% strain, 23°C, 168 hr, in reference fuel A (isooctane)	6.0	%	ISO 175
300% strain, 23°C, 168 hr, in reference fuel A (isooctane)	2.0	%	ISO 175

23°C, 336 hr, in Reference Fuel C	-20	%	ISO 175
100% strain, 23 c, 336 hr, in Reference Fuel C	-36	%	ISO 175
300% strain, 23 c, 336 hr, in Reference Fuel C	-33	%	ISO 175
23°C, 336 hr, in reference fuel A (isooctane)	7.0	%	ISO 175
100% strain, 23°C, 336 hr, in reference fuel A (isooctane)	1.0	%	ISO 175
300% strain, 23°C, 336 hr, in reference fuel A (isooctane)	3.0	%	ISO 175
23°C, 504 hr, in Reference Fuel C	-15	%	ISO 175
100% strain, 23 c, 504 hr, in Reference Fuel C	-36	%	ISO 175
300% strain, 23 c, 504 hr, in Reference Fuel C	-51	%	ISO 175
23°C, 504 hr, in reference fuel A (isooctane)	13	%	ISO 175
100% strain, 23°C, 504 hr, in reference fuel A (isooctane)	-4.0	%	ISO 175
300% strain, 23°C, 504 hr, in reference fuel A (isooctane)	-4.0	%	ISO 175
Change in Ultimate Elongation			
23°C, 70 hr, Class C Standard Fuel	0.0	%	ASTM D471
23°C, 70 hr, in reference fuel A	5.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	-6.0	%	ASTM D471
23°C, 168 hr, in reference fuel A	7.0	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	-2.0	%	ASTM D471
23°C, 336 hr, in reference fuel A	3.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	-2.0	%	ASTM D471
23°C, 504 hr, in reference fuel A	8.0	%	ASTM D471
100°C, 70 hr, in ASTM #1 oil	18	%	ASTM D471, ISO 175
100°C, 70 hr, in ASTM #3 oil	17	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #1 oil	19	%	ASTM D471, ISO 175
100°C, 168 hr, in ASTM #3 oil	25	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #1 oil	23	%	ASTM D471, ISO 175
100°C, 336 hr, in ASTM #3 oil	27	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #1 oil	32	%	ASTM D471, ISO 175
100°C, 504 hr, in ASTM #3 oil	38	%	ASTM D471, ISO 175
23°C, 70 hr, in Reference Fuel C	0.0	%	ISO 175
23°C, 70 hr, in reference fuel A (isooctane)	5.0	%	ISO 175
23°C, 168 hr, in Reference Fuel C	-6.0	%	ISO 175
23°C, 168 hr, in reference fuel A (isooctane)	7.0	%	ISO 175
23°C, 336 hr, in Reference Fuel C	-2.0	%	ISO 175

23°C, 336 hr, in reference fuel A (isooctane)	3.0	%	ISO 175
23°C, 504 hr, in Reference Fuel C	-2.0	%	ISO 175
23°C, 504 hr, in reference fuel A (isooctane)	8.0	%	ISO 175
Change in Durometer Hardness			
Support D, 23°C, 70 hr, in Reference Fuel C	-11		ASTM D471, ISO 175
Support D, 23°C, 70 hr, in reference fuel A	1.0		ASTM D471
Support D, 23°C, 168 hr, in Reference Fuel C	-13		ASTM D471, ISO 175
Support D, 23°C, 168 hr, in reference fuel A	1.0		ASTM D471
Support d, 23 c, 336 hr, in Reference fuel c	-10		ASTM D471, ISO 175
Support D, 23°C, 336 hr, in reference fuel A	0.0		ASTM D471
Support D, 23°C, 504 hr, in Reference Fuel C	-13		ASTM D471, ISO 175
Support D, 23°C, 504 hr, in reference fuel A	2.0		ASTM D471
Support D, 100°C, 70 hr, in ASTM #1 oil	0.0		ASTM D471
Support D, 100°C, 70 hr, in ASTM #3 oil	5.0		ASTM D471
Support D, 100°C, 168 hr, in ASTM #1 oil	2.0		ASTM D471
Support D, 100°C, 168 hr, in ASTM #3 oil	5.0		ASTM D471
Support D, 100°C, 336 hr, in ASTM #1 oil	0.0		ASTM D471
Support D, 100°C, 336 hr, in ASTM #3 oil	-4.0		ASTM D471
Support D, 100°C, 504 hr, in ASTM #1 oil	2.0		ASTM D471
Support D, 100°C, 504 hr, in ASTM #3 oil	-2.0		ASTM D471
Support D, 23°C, 70 hr, in reference fuel A (isooctane)	1.0		ISO 175
Support D, 23°C, 168 hr, in reference fuel A (isooctane)	1.0		ISO 175
Support D, 23°C, 336 hr, in reference fuel A (isooctane)	0.0		ISO 175
Support D, 23°C, 504 hr, in reference fuel A (isooctane)	2.0		ISO 175
Support D, 100°C, 70 hr, in ASTM #1 oil	0.0		ISO 175
Support D, 100°C, 70 hr, in ASTM #3 oil	5.0		ISO 175
Support D, 100°C, 168 hr, in ASTM #1 oil	2.0		ISO 175
Support D, 100°C, 168 hr, in ASTM #3 oil	5.0		ISO 175
Support D, 100°C, 336 hr, in ASTM #1 oil	0.0		ISO 175
Support D, 100°C, 336 hr, in ASTM #3 oil	-4.0		ISO 175
Support D, 100°C, 504 hr, in ASTM #1 oil	2.0		ISO 175
Support D, 100°C, 504 hr, in ASTM #3 oil	-2.0		ISO 175
Change in Volume			

23°C, 70 hr, Class A standard fuel	0.0	%	ASTM D471
23°C, 70 hr, Class C Standard Fuel	22	%	ASTM D471
23°C, 168 hr, Class A standard fuel	1.0	%	ASTM D471
23°C, 168 hr, Class C Standard Fuel	26	%	ASTM D471
23°C, 336 hr, Class A standard fuel	1.0	%	ASTM D471
23°C, 336 hr, Class C Standard Fuel	26	%	ASTM D471
23°C, 504 hr, Class A standard fuel	1.0	%	ASTM D471
23°C, 504 hr, Class C Standard Fuel	26	%	ASTM D471
100°C, 70 hr, ASTM Standard Oil (No.1)	0.0	%	ASTM D471
100°C, 70 hr, ASTM Standard Oil (No.3)	9.0	%	ASTM D471
100°C, 168 hr, ASTM Standard Oil (No.1)	0.0	%	ASTM D471
100°C, 168 hr, ASTM Standard Oil (No.3)	10	%	ASTM D471
100°C, 336 hr, ASTM Standard Oil (No.1)	0.0	%	ASTM D471
100°C, 336 hr, ASTM Standard Oil (No.3)	12	%	ASTM D471
100°C, 504 hr, ASTM Standard Oil (No.1)	0.0	%	ASTM D471
100°C, 504 hr, ASTM Standard Oil (No.3)	13	%	ASTM D471
23°C, 70 hr, in reference fuel A	0.0	%	ISO 175
23°C, 70 hr, in reference fuel C	22	%	ISO 175
23°C, 168 hr, in reference fuel A	1.0	%	ISO 175
23°C, 168 hr, in reference fuel C	26	%	ISO 175
23°C, 336 hr, in reference fuel A	1.0	%	ISO 175
23°C, 336 hr, in reference fuel C	26	%	ISO 175
23°C, 504 hr, in reference fuel A	1.0	%	ISO 175
23°C, 504 hr, in reference fuel C	26	%	ISO 175
100°C, 70 hr, in ASTM #1 oil	0.0	%	ISO 175
100°C, 70 hr, in ASTM #3 oil	9.0	%	ISO 175
100°C, 168 hr, in ASTM #1 oil	0.0	%	ISO 175
100°C, 168 hr, in ASTM #3 oil	10	%	ISO 175
100°C, 336 hr, in ASTM #1 oil	0.0	%	ISO 175
100°C, 336 hr, in ASTM #3 oil	12	%	ISO 175
100°C, 504 hr, in ASTM #1 oil	0.0	%	ISO 175
100°C, 504 hr, in ASTM #3 oil	13	%	ISO 175
Thermal	Nominal Value	Unit	Test Method
Brittleness Temperature	< -68.0	°C	ASTM D746, ISO 974
Glass Transition Temperature	-27.0	°C	DMA
Vicat Softening Temperature	128	°C	ISO 306/50, ASTM D1525 ⁴
CLTE - Flow	1.3E-4	cm/cm/°C	ASTM D696
Additional Information	Nominal Value	Unit	Test Method
Compressive Load			ASTM D575
10% Deflection	5.52	MPa	ASTM D575
15% Deflection	7.58	MPa	ASTM D575
2% Deflection	1.03	MPa	ASTM D575

20% Deflection	10.3	MPa	ASTM D575
25% Deflection	12.4	MPa	ASTM D575
5% Deflection	2.93	MPa	ASTM D575
50% Deflection	31.0	MPa	ASTM D575
Injection	Nominal Value	Unit	
Drying Temperature - Desiccant Dryer	99.0 - 110	°C	
Drying Time - Desiccant Dryer	2.0	hr	
Suggested Max Moisture	< 0.030	%	
Suggested Shot Size	40 - 80	%	
Suggested Max Regrind	20	%	
Rear Temperature	180 - 200	°C	
Middle Temperature	180 - 205	°C	
Front Temperature	180 - 210	°C	
Nozzle Temperature	185 - 210	°C	
Processing (Melt) Temp	205	°C	
Mold Temperature	15.0 - 45.0	°C	
Injection Pressure	41.4 - 96.5	MPa	
Clamp Tonnage	4.1 - 6.9	kN/cm ²	
Screw L/D Ratio	20.0:1.0		
Screw Compression Ratio	2.5:1.0 - 3.0:1.0		

Injection instructions

Injection Pressure, 2nd stage: 5000 to 10000 psiTimers (per 0.125 in cross section):

Boost: 3 to 10 sec

2nd Stage: 8 to 20 sec

Cool: 20 to 35 sec

Extrusion	Nominal Value	Unit
Drying Temperature	99.0 - 110	°C
Drying Time	2.0	hr
Cylinder Zone 1 Temp.	180 - 210	°C
Cylinder Zone 2 Temp.	180 - 210	°C
Cylinder Zone 3 Temp.	180 - 205	°C
Melt Temperature	185 - 210	°C
Die Temperature	180 - 200	°C

NOTE

1. C mould
2. Post-cured 16 hr at 230°F
3. Post-cured 16 hr at 230°F
4. 速率 A (50°C/h)

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Recommended distributors for this material

Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

